

CLAIMS

1. An electrolyte membrane for a fuel cell before an electrode is applied to said electrolyte membrane, a masking member having a hole bored in a shape of a desired electrode being laminated on at least one side of said electrolyte membrane.

2. An electrolyte membrane for a fuel cell according to Claim 1, wherein masking members having similar holes bored in a shape of a desired electrode are laminated on both sides of said electrolyte membrane.

3. An electrolyte membrane for a fuel cell according to Claim 1 or 2, wherein said masking member self-adheres to said electrolyte membrane or adheres to said electrolyte membrane through a slight adhesive.

4. An electrolyte membrane for a fuel cell according to any one of Claims 1 to 3, wherein said electrolyte membrane and/or said masking member is a web, and said electrolyte membrane is made into a roll stock.

5. An electrolyte membrane for a fuel cell according to any one of Claims 1 to 3, wherein said electrolyte membrane is cut into sheets.

6. An electrolyte membrane for a fuel cell according to any one of Claims 1 to 5, wherein a gas barrier sheet or web is laminated on at least one

masking member.

7. An electrolyte membrane for a fuel cell according to any one of Claims 1 to 6, wherein a thickness of said masking member is substantially the same as or larger than a thickness of an electrode to be formed in a post-process.

8. An electrolyte membrane for a fuel cell according to any one of Claims 1 to 7, wherein said electrolyte member is wrapped with a gas barrier wrapping material.

9. An electrolyte membrane-electrode assembly for a fuel cell, wherein said electrolyte membrane-electrode assembly is manufactured by applying or filling in an electrode ink or/and a powder electrode material on an electrolyte membrane for a fuel cell through a hole of a masking member of the electrolyte membrane for the fuel cell as recited in any one of Claims 1 to 8, and by peeling off the masking member.

10. An electrolyte membrane-electrode assembly for a fuel cell according to Claim 9, wherein the electrode ink or/and the powder electrode material applied or filling in on the electrolyte membrane for the fuel cell is fixed to the electrolyte membrane for the fuel cell.

11. An electrolyte membrane-electrode assembly for a fuel cell according to Claim 10, wherein the electrode ink or/and the powder electrode material is

dried or heated or/and pressed so as to be fixed to the electrolyte membrane for the fuel cell.

12. A fuel cell, wherein said fuel cell uses an electrolyte membrane-electrode assembly as recited in
5 any one of Claims 9 to 11.

13. An electrolyte membrane composite,
comprising:

an electrolyte membrane; and

a masking member provided with a plurality of
10 holes,

wherein said masking member is detachably attached to one side of said electrolyte membrane.

14. An electrolyte membrane composite according to Claim 13, wherein said holes are shaped in a shape
15 of a fuel electrode for a fuel cell.

15. An electrolyte membrane composite according to Claim 13 or 14, further comprising a masking member detachably attached to the other side of said electrolyte membrane.

20 16. An electrolyte membrane composite according to any one of Claims 13 to 15, further comprising a gas barrier sheet.

17. An electrolyte membrane composite according to Claim 16, wherein said gas barrier sheet is
25 detachably attached to said masking member.

18. An electrolyte membrane composite according to Claim 16 or 17, wherein said gas barrier sheet is

detachably attached to said electrolyte membrane.

19. An electrolyte membrane composite according to any one of Claims 13 to 18, wherein said masking member is made of an autohesion material.

5 20. An electrolyte membrane composite according to any one of Claims 16 to 19, wherein said gas barrier sheet is made of an autohesion material.

21. An electrolyte membrane composite according to any one of Claims 13 to 20, wherein said
10 electrolyte membrane composite is wound to be made into a roll stock.

22. An electrolyte membrane composite according to any one of Claims 13 to 20, wherein said electrolyte membrane composite is cut to be made into
15 sheets each of which has at least one hole.

23. An electrolyte membrane composite according to any one of Claims 13 to 22, wherein said electrolyte membrane composite is wrapped with a gas barrier wrapping material.

20 24. A method of manufacturing an electrolyte membrane composite having an electrolyte membrane and a masking member, said method comprising:

 boring a desired shape hole in the masking member; and

25 thereafter, attaching the masking member to the electrolyte membrane.

25. A method of manufacturing an electrolyte

membrane composite having an electrolyte membrane and a masking member, said method comprising:

attaching the masking member to the electrolyte membrane; and

5 thereafter, boring a desired shape hole in the masking member.

26. A method of manufacturing an electrolyte membrane-electrode assembly for a fuel cell, comprising:

10 installing rotatably a roll stock of an electrolyte membrane composite having an electrolyte membrane and a masking member provided with a plurality of holes;

15 drawing the electrolyte membrane composite from the roll stock;

applying or filling in an electrode ink or/and a powder electrode material on the electrolyte membrane through the plurality of holes of the masking member while transporting the electrolyte membrane composite; and

20 peeling off the masking member from the electrolyte membrane.

27. A method of manufacturing an electrolyte membrane-electrode assembly for a fuel cell, comprising:

25 installing rotatably a roll stock of an electrolyte membrane composite having an electrolyte

membrane, a masking member provided with a plurality of holes, and a gas barrier sheet;

drawing the electrolyte membrane composite from the roll stock;

5 peeling off the gas barrier sheet;

applying or filling in an electrode ink or/and a powder electrode material on the electrolyte membrane through the plurality of holes of the masking member while transporting the electrolyte

10 membrane composite; and

peeling off the masking member from the electrolyte membrane.

28. A method of manufacturing an electrolyte membrane-electrode assembly for a fuel cell,

15 comprising:

installing rotatably a roll stock of an electrolyte membrane composite having an electrolyte membrane, a first masking member attached to a first side of the electrolyte membrane and provided with a plurality of holes, and a second masking member
20 attached to a second side of the electrolyte membrane and provided with a plurality of holes;

drawing the electrolyte membrane composite from the roll stock;

25 applying or filling in an electrode ink or/and a powder electrode material on the first side of the electrolyte membrane through the plurality of holes

of the first masking member while transporting the electrolyte membrane composite;

peeling off the first masking member from the electrolyte membrane;

5 reversing the electrolyte membrane and the second masking member;

applying or filling in the electrode ink or/and the powder electrode material on the second side of the electrolyte membrane through the plurality of
10 holes of the second masking member while transporting the electrolyte membrane and the second masking member; and

peeling off the second masking member from the electrolyte membrane;

15 29. A method of manufacturing an electrolyte membrane-electrode assembly for a fuel cell, comprising:

installing a sheet of an electrolyte membrane composite having an electrolyte membrane and a
20 masking member provided with at least one hole;

applying or filling in an electrode ink or/and a powder electrode material on the electrolyte membrane through the at least one hole of the masking member; and

25 peeling off the masking member from the electrolyte membrane.

30. A method according to any one of Claims 26 to 29, further comprising fixing the electrode ink or/and the powder electrode material to the electrolyte membrane.

5 31. A method of manufacturing an electrolyte membrane-electrode assembly for a fuel cell, comprising:

 transporting an electrolyte membrane composite having an electrolyte membrane, a first masking
10 member attached to a first side of the electrolyte membrane and provided with a plurality of holes, and a second masking member attached to a second side of the electrolyte membrane and provided with a plurality of holes; and

15 filling in or/and applying a powder electrode material on the electrolyte membrane through the plurality of holes of the first and second masking members while transporting the electrolyte membrane.

 32. A method according to Claim 31, further
20 comprising increasing a density of the powder electrode material filled in or applied to the plurality of holes of the first and second masking members.

 33. A method according to Claim 32, further
25 comprising reiterating said filling in or/and applying and said increasing the density of the powder electrode material.

34. A method according to any one of Claims 31 to 33, further comprising:

heating or/and pressing the powder electrode material; and

5 peeling off the first and second masking members.

35. A method according to any one of Claims 31 to 34, wherein at least said filling in or/and applying the powder electrode material is performed
10 in vacuum.

36. A method according to any one of Claims 31 to 35, further comprising cutting the electrolyte membrane.

15 37. An electrolyte membrane-electrode assembly for a fuel cell, wherein said electrolyte membrane-electrode assembly is manufactured by using a method as recited in any one of Claims 26-36.

38. A fuel cell, wherein said fuel cell uses an
20 electrolyte membrane-electrode assembly as recited in Claim 37.

39. A method of manufacturing an electrolyte membrane-electrode assembly for a fuel cell, comprising:

25 laminating a masking member provided with a hole bored in a shape of an electrode onto a gas diffusion layer or/and an indirect transfer film for

an electrode;

applying or filling in an electrode ink or/and
a powder electrode material on the gas diffusion
layer or/and the indirect transfer film through the

5 hole;

peeling the masking member; and

transferring or heat-pressing the electrode ink
or/and the powder electrode onto an electrolyte
membrane.

10 40. A method according to Claim 39, further
comprising:

forming an anode and a cathode on the gas
diffusion layer or/and the indirect transfer film for
both electrodes; and

15 at the same time transferring or pressing the
anode and the cathode onto the electrolyte membrane.

41. An electrolyte membrane-electrode assembly
for a fuel cell, wherein said electrolyte membrane-
electrode assembly is manufactured by using a method
20 as recited in Claim 39 or 40.